

CLAIMS:

What is claimed is:

1. A circuit for detecting a reversal in polarity, comprising:
 - (a) a differential amplifier;
 - (b) a low pass filter connected in series with the amplifier; and
 - (c) a Schmidt trigger connected in series with the low pass filter.
2. The circuit described in Claim 1, wherein the differential amplifier comprises an operational amplifier having a feedback loop from an output terminal thereof to an inverting input terminal thereof.
3. The circuit described in Claim 1, wherein the Schmidt trigger comprises an operational amplifier having a feedback loop from an output terminal thereof to a non-inverting input terminal thereof.
4. A method for detecting a polarity reversal in a telephony circuit comprising:
 - a. connecting a differential input voltage across the inputs of a differential amplifier;
 - b. connecting a low pass filter to an output of the differential amplifier;
 - c. connecting a Schmidt trigger to an output of a false detection filter; and
 - d. determining polarity stasis or reversal based upon the output of the Schmidt trigger.
5. The method for detecting a polarity reversal as described in claim 4, wherein the step of connecting a differential input voltage across a differential amplifier comprises connecting said voltage across an operational amplifier having a feedback loop from an output terminal thereof to an inverting input terminal thereof.
6. The method for detecting a polarity reversal as described in claim 4, wherein the step of connecting a Schmidt trigger comprises connecting an operational amplifier

having a feedback loop from an output terminal thereof to a non-inverting input terminal thereof.

7. The method as claimed in claim 4, wherein the differential input voltage
5 comprises a DC voltage.

8. The method as claimed in claim 4, wherein the differential amplifier comprises a
feedback loop connected from an output thereof to an inverting input terminal
thereof.

10 9. The method as claimed in claim 4, wherein the Schmidt trigger comprises a
feedback loop connected from an output thereof to a non-inverting input terminal
thereof.

15 10. The method as claimed in claim 7, wherein the differential amplifier comprises a
feedback loop connected from an output thereof to an inverting input terminal
thereof.

20 11. The method as claimed in claim 7, wherein the Schmidt trigger comprises a
feedback loop connected from an output thereof to a non-inverting input terminal
thereof.

25 12. The method as claimed in claim 7, further comprising eliminating voltage polarity
transitions that are shorter than a defined time.

30 13. A method for detecting a polarity reversal in a telephony circuit comprising:
(a) comparing the relative voltage of two inputs;
(b) filtering out voltage a polarity reversal that lasts shorter than a
defined time; and
(c) filtering out polarity reversals where the final relative voltage is
below a defined threshold.

14. Method of claim 13 where the output of the polarity reversal detector operates to do at least one of setting a flag, becoming stored in a memory, or driving an indicator.

15. The method of claim 13, where the method is implemented in an integrated circuit.

16. The method of claim 14, where the method is implemented in an integrated circuit.

17. The method of claim 13, where the defined time is such so as to filter out any polarity reversal induced by an incoming ring signal.

18. The method of claim 13, where the defined threshold is such so as to filter out any polarity reversal caused by any of battery voltage drops, line disconnections, or loop current drops.

19. The method of claim 16, where the defined threshold is such so as to filter out any polarity reversal caused by any of battery voltage drops, line disconnections, or loop current drops.

20. Apparatus for detecting a reversal in polarity, comprising:

- (a) a comparator;
- (b) a low pass filter; and
- (c) a hysteresis element.

21. The circuit described in claim 20, wherein the hysteresis element comprises a Schmidt trigger.

22. The circuit described in Claim 21, wherein the out put of the comparator is input to the the low pass filter, and the low pass filter output is input to the hysteresis

element.

23. A method of polarity reversal detection, comprising:

- (a) comparing the relative voltage between two nodes in a telephonic device to determine transitions in loop current direction;
- (b) ensuring that a transition has a minimum temporal duration; and
- (c) ensuring that a transition is to a minimum relative voltage.

24. The method of claim 23, where said minimum temporal duration is at least 67 milliseconds.

25. The method of claim 23, where said relative minimum voltage is such that a comparator output reaches 2/3 of the opposite saturation voltage.

26. The method of claim 24, where said relative minimum voltage is such that a comparator output reaches 2/3 of the opposite saturation voltage

27. The apparatus of claim 20, where the low pass filter is designed to filter out any polarity reversal induced by an incoming ring signal.

28. The apparatus of claim 20 where the hysteresis element is such so as to filter out any polarity reversal caused by any of battery voltage drops, line disconnections, or loop current drops.

29. The apparatus of claim 27 where the hysteresis element is such so as to filter out any polarity reversal caused by any of battery voltage drops, line disconnections, or loop current drops.